

**THE INFLUENCE OF EDUCATION, HEALTH AND  
INCOME ON POVERTY IN KALIMANTAN PROVINCE  
FROM 2012-2016**

A THESIS

Presented as Partial Fulfillment of the Requirements to Obtain the Bachelor  
Degree in Economics Department



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YOGYAKARTA  
2020**

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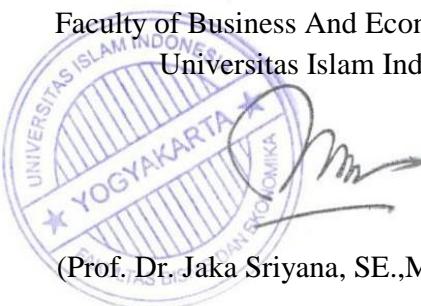
Yogyakarta, January 27, 2020

International Program

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Dean



## **DECLARATION OF AUTHENTICITY**

Herein I declare the originality of the thesis; I have not presented anyone else's work to obtain my university degree, nor I have presented anyone else's words, ideas or expression without acknowledgement. All quotations are cited and listed in the bibliography of the thesis.

If in the future this statement is proven to be false, I am willing to accept any sanction complying with determined regulation or its consequences.

Yogyakarta, January 27,2020



Prastika Yulianingrum

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Yogyakarta, January 2020

PrastikaYulianingrum

## **ABSTRACT**

Poverty is a very complex and fundamental problem that occurs in urban and rural areas in Indonesia. One of the factors of poverty is the lack of services and adequate infrastructure. This research was conducted to determine the effect of education, health, and income variables on poverty levels in 4 provinces in Kalimantan. The analysis used in this study is a quantitative analysis using the *Fixed Effect Model* method in panel data with *time series* data from 2012 to 2016 and it is found that from the two variables, Education and Income variables are positive and insignificant result and the Health variable is negative on poverty.

**Keywords:** Poverty, Education, Health, Income

## **ABSTRAK**

Kemiskinan adalah masalah yang sangat kompleks dan mendasar yang terjadi diperkotaan maupun pedesaan yang ada di Indonesia. Salah satu yang menjadi faktor dari kemiskinan adalah kurangnya sarana dan prasarana yang memadai. Penelitian ini dilakukan untuk mengetahui pengaruh dari variable edukasi, kesehatan, dan pendapatan terhadap tingkat kemiskinan yang ada di 4 provinsi di Kalimantan. Analisis yang digunakan dalam penelitian ini adalah analisis kuantitatif menggunakan metode Fixed Effect Model dalam data panel dengan data time series tahun 2012 hingga tahun 2016 dan diperoleh bahwa dari dua variable yang ada, variabel Pendidikan dan Pendapatan adalah positif namun insignifikan dan variable kesehatan diperoleh negatif terhadap kemiskinan.

**Kata kunci:** Kemiskinan, Pendidikan, Kesehatan dan Pendapatan

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## **CHAPTER I**

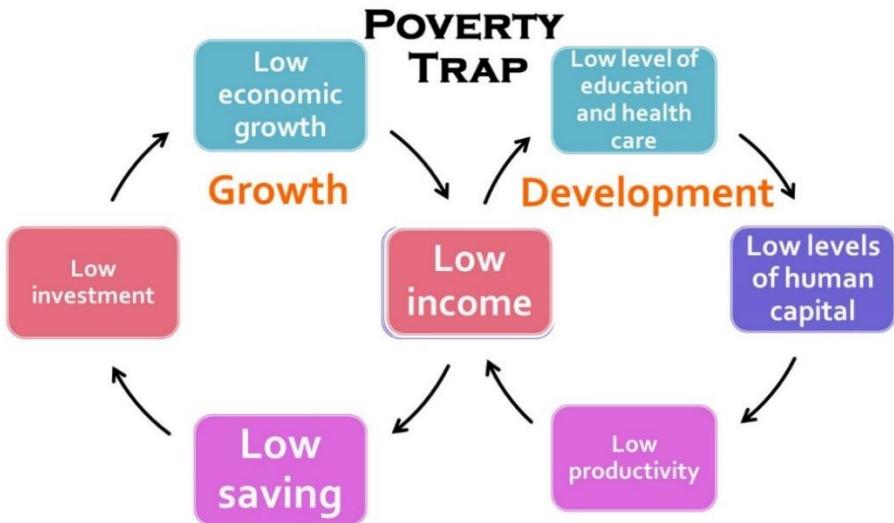
### **INTRODUCTION**

#### **1.1 Background**

Indonesia's economy has been having a relatively stable growth over the past decade, despite some crisis it had faced. But like any other developing countries, Indonesia also has to deal with poverty as the illness that taints its development. Poverty is a very complex social issue and must be immediately handled in order to be resolved. Indonesia as a developing country and has a large population of course cannot be seen through the problem. The evidenced of the large number of poor people, the majority of people who live in the rural areas that is difficult to access and in also the big cities where much more poverty was found.

The term of poverty occurs when a person or people are unable to provide for their daily needs during their lifetime. Poverty can also be said to be a lack of money and goods to ensure survival.

Poverty has a vicious cycle as known as Poverty Trap that hinders its bearer to escape it. Figure 1.1 explains how the cycle binds the poor in it.

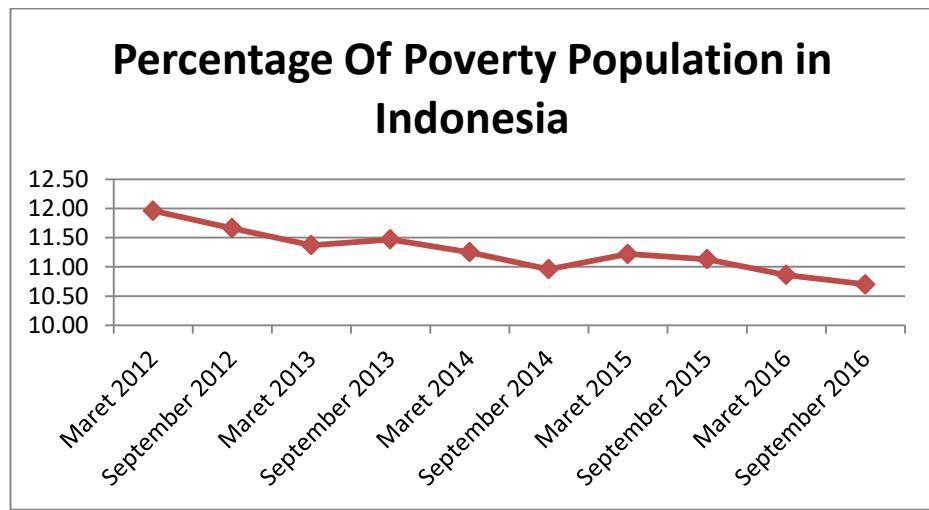


*Figure 1. 1. Poverty Trap*

*Source: <http://www.un.org/millenniumgoals/bkgd.shtml>*

Poverty trap illustrates how someone who is afflicted with at least one factor that could drag her or him down to poverty will struggle to escape from the poor condition. For example, someone with low level of health will have difficulties in education and will have lower productivity compared to the average person. Someone with low income will struggle to find a job with sufficient income. The low income will lead to low saving and investment and trap him or her in poverty for a long period, even also trap his or her children in poverty.

The possible ways to break the vicious cycle of poverty are through education and health programs. Indonesian Government has been pouring considerable portion into health and education from its State Budget. Since 2009, the allocation budget for education had reached 20% in State Budget and in 2016, for the first time government fulfilled the 5% health budget from State Budget. (World Bank Group, 2015)



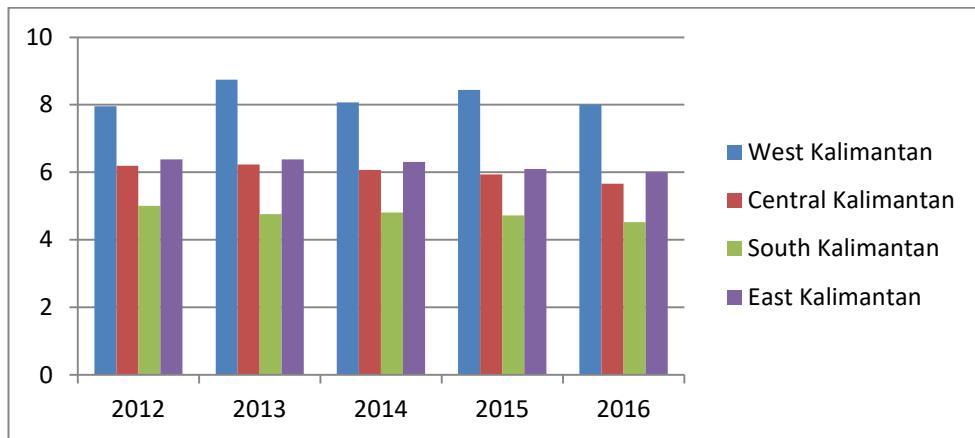
*Figure 1. 2. Percentage of Poverty Population Indonesia*

Source: DataProcess 2020(BPS)

From Figure 1.2 Nationally, Indonesia's poverty percentage in 2012-2016 continues to decline. The decline was inseparable from the government's hard work in overcoming poverty through various pro-people programs and had a positive effect on improving the ability of the community. The government must also stabilize the price of basic necessities because if it continues to increase it will cause inflation and result in the population classified as not poor with income around the poverty line will shift the position of being poor.

The problem of poverty is not only a national problem, but also spread to every region in all regions of Indonesia. One of area in Indonesia where the poor population is still quite high is Kalimantan province. Kalimantan is one of the biggest islands in Indonesia. There are 5 provinces in Kalimantan such as West Kalimantan, Central Kalimantan, South Kalimantan, East Kalimantan

and the new province North Kalimantan. Kalimantan has a population of more than 21 million people.



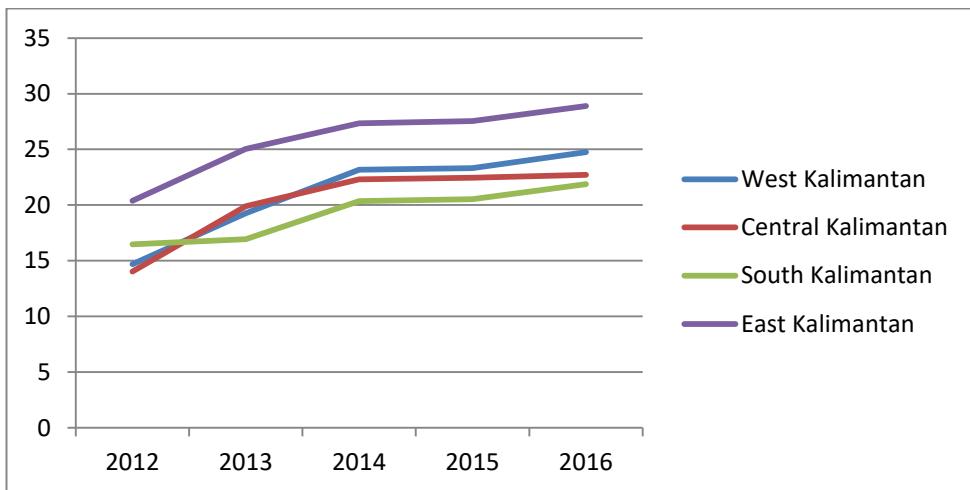
**Figure 1. 3.** Percentage of Poor Population in Kalimantan

Source: BadanPusat Statistic (2017) / Data Process

From figure 1.3, it is known that poverty rate in West Kalimantan province increased 8.76% in 2013, Central Kalimantan increased by 6.23 % in the same period, in South Kalimantan in 2011 at 5.01% and East Kalimantan in 2012-2013 was equal to 6.38%. From the table above, West Kalimantan showed increasing of poverty while the other province showed the decreasing.

Within 5 years, the poverty rate in Kalimantan has been up and down. The rise and fall of poverty is caused by various aspect. The high number of poverty causes many problems one of which is unable to meet the needs of both primary and secondary needs.

Many kinds of efforts has been undertaken by the government, but this is cannot be avoided because the problem of poverty still occurs.



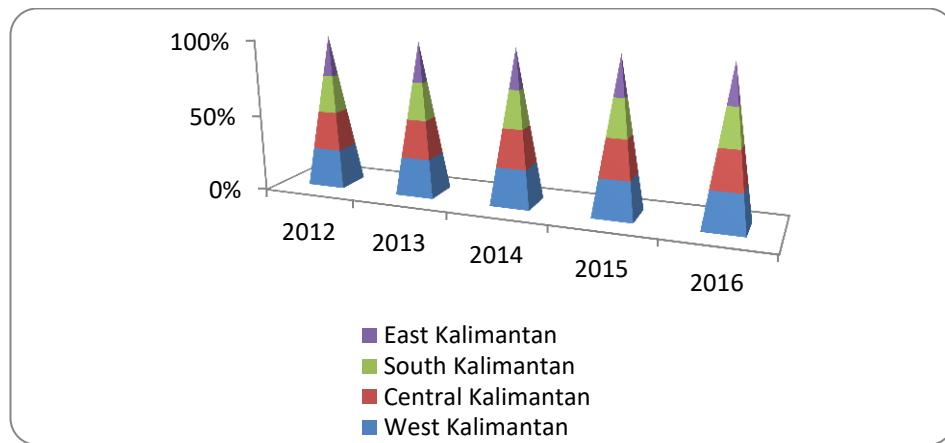
**Figure 1. 4.**Percentage of School Enrollment Rate from the Ages of 19-24

Source: BadanPusat Statistic (2017)/Data Process

Figure 1.4 showed the data of education in 4 province of Kalimantan.

From the data in 2012 until 2016, education rate or percentage of enrollment rate relatively increases. South Kalimantan has the lowest value rate of 21.89% and the highest rate was East Kalimantan.

If education percentage increases every year, the system and the quality of education in Kalimantan are good and growing up. The increasing number of school enrollments shows that the awareness of the education for the future and life. The high level of education can also show welfare in the economy and the opportunity to get job is relatively easier compare to those with low education.

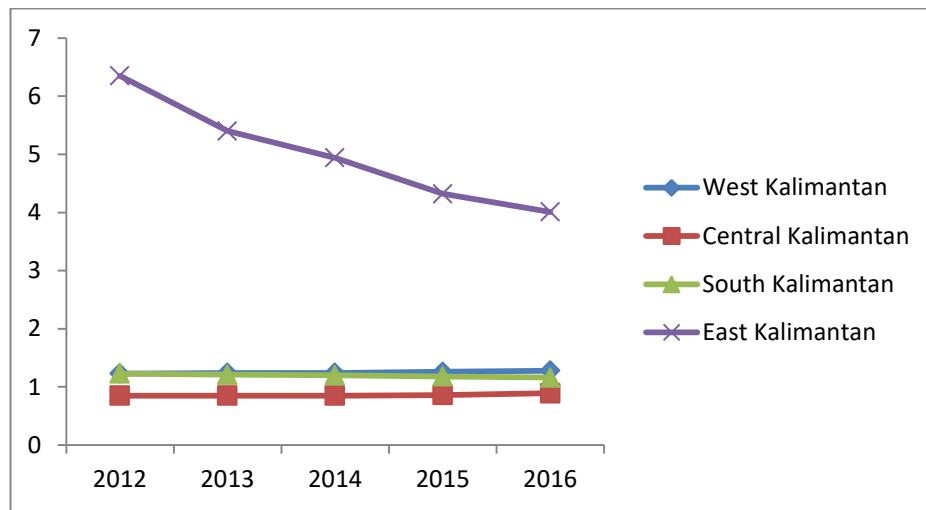


*Figure 1. 5.Percent of Life Expectancy of Birth*

Source: BadanPusatStatistic (2017)

Figure 1.5 shows that life expectancy of birth in each province in Kalimantan increased annually but the increase was not to significant. The increases only 0.10% to 0.50%. East Kalimantan Showed that the highest life expectancy of birth data was 73.68% and the lowest rank was South Kalimantan of 67.92% in 2016.

Life expectancy of birth is an indicator that can reflect the health status and system of a region, whether from infrastructure, access and health quality. The improvement in every aspect of health should be better.



*Figure 1. 6. Percentage of distribution of GDP at current price*

Source: BadanPusatStatistik (2017)/ Data Process

Table 1.5 shows that GRDP in every province in Kalimantan is different. The highest percentage rate was East Kalimantan at 4.01% in 2016 and the lowest percentage rate was Central Kalimantan at 0.89%.

This research examined whether the variables that involved calculating income, health, and education have any effect (direct or indirect) on the decreasing rate of poverty.

## **1.2. Problem Identification**

From the above explanation, the researcher intends to analyze the effect of the human development (health, education and income) on poverty.

## **1.3. Problem Formulation**

Based on the background and the problem identification, the main questions of this research are:

1. What is the influence of Education on Poverty in Kalimantan Province from 2012-2016?
2. What is the influence of Health on Poverty in Kalimantan Province from 2012-2016?
3. What is the influence of Income on Poverty in Kalimantan Province from 2012-2016?

#### **1.4. Problem Limitation**

This research limits its scope and stay focus only to several points below:

1. This research used life expectancy at birth health variable data despite various health data available.
2. This research used school length expectation and school length mean as education variable data despite considerable kinds of available education data kinds.
3. This Study will only use GDBP (Gross Domestic Brute Product) as income data.
4. All data ranged from 2012 until 2016
5. This research used pool data model to process all variable involved in order to fulfill the research purpose.

## **1.5. Research Objective**

The research tries to identify whether there is any influence health, education and income:

- a) To analyze the influence of health on poverty in Kalimantan province from 2012 until 2016.
- b) To analyze the influence of education on poverty in Kalimantan province from 2012-2016.
- c) To analyze the influence of Income on poverty in Kalimantan province from 2012- 2016.

## **1.6. Research Contribution**

### 1. Government

Hopefully, by using this research, the Government will make the right policy to reduce poverty, and increase the welfare of the citizen in Kalimantan province.

### 2. Researcher

The researcher hopes this research can be used as reference as for the next researches who are interest in Human development (health, income and education) and poverty. Besides that, it aims to enrich library, especially in Economic Department.

## **CHAPTER II**

### **REVIEW OF RELATED LITERATURE**

#### **2.1. Poverty**

World Bank describes poverty as "*Poverty is lack of shelter. Poverty is being sick and not being able to see a doctor. Poverty is not being able to go to school and not knowing how to read. Poverty is not having a job, is fear of the future, living one day at a time. Poverty is losing a child to illness brought about by unclear water. Poverty is powerlessness, lack of representation*". In shortly, (World Bank, 2000) defines poverty as a lack of welfare and inability to meet needs.

##### **2.1.1 Type of poverty**

Poverty can be classified into several category Maipata (2014), they are:

###### a. Structural Poverty

Structural poverty made poverty generally cause by institutional system and structure, such as political, economic, security and other system. Therefore, the social condition of society becomes low (underdevelopment trap).

###### b. Natural Poverty

Natural poverty is the cause of low human resources and natural resources.

c. Cultural Poverty

In this type of poverty is caused by the habit, such us unwilling to work hard, lazy, undisciplined and etc. Because of it, the ethic of work becomes low.

d. Absolute Poverty

Absolute poverty can be seen thought the ability to meet minimum basic needs which are usually based on nutritional needs.

e. Relative Poverty

This type of poverty is usually obtained from comparing high income communities with low income communities. Another way of determining relative poverty is by looking the average income of the community.

There is another type of poverty:

- a. It is the extreme kind of poverty involving the chronic lack of basic food, clean water, health and housing.
- b. This kind is usually in relation to other members and families in the society.
- c. People or families can be poor because of some adversities like earthquakes, floods or a serious illness.

### **2.1.2. Caused of Poverty**

According to Maipata (2014) the cause poverty are lack of education, high divorce rate cause feminization of poverty.

There are four views explaining the cause of poverty (Maipata, 2014) :

a) Individual explanation

The poverty tends to be caused by the characteristics of the poor themselves. For example lazy, less serious in every way, including when in work.

b) Familial explanation

The poverty is caused by heredity. Because of the low level of parental education that make it into the poverty ring. By the end, parents cannot give proper education to their children.

c) Sub cultural explanation

The poverty can be caused by culture, customs or environmental characteristics.

d) Structural explanations

This view considers that poverty arises as a result of imbalances, status differences, policies and other differences that rise to different right to work, school and etc.

According to Todaro (2003) poverty that occurs in developing countries results from the interaction between the following 6 characteristics:

- 1) The level of national income of developing countries is relatively low, and the rate of economic growth is relatively slow.
- 2) Per capita income of Third World countries is also still low and growth is very slow, in fact there are some that have stagnated.
- 3) Income distribution is very unequal or very uneven.
- 4) The majority of the population in developing countries must live under the pressure of absolute poverty.
- 5) Poor and very limited health facilities and services, malnutrition and many epidemics so that infant mortality rates in developing countries are ten times higher than those in developed countries.
- 6) Educational facilities in most developing countries and the contents of the curriculum are still relatively irrelevant or inadequate

The other causes of poverty are economic development, economic global, low of technology, low education, low of natural resources, low level of human resources, high human development, politic stability, corruption and many more.

### **2.1.3. Poverty Measurement**

According to the BPS (2010), to measure poverty using the concept of ability to meet basic needs (basic needs approach). With this approach, poverty is defined as the inability to meet minimum standards of basic needs which include both food and non-food needs. Based on this approach, the indicator used is the Head Count Index (HCI), which is the number and percentage of poor people below the poverty line.

In addition to the Head Count Index ( $P_0$ ), there are also other indicators used to measure poverty levels, namely the poverty depth index (Poverty Gap Index-dan1) and the Poverty Severity Index ( $P_2$ ) formulated by Foster-Greer-Thorbecke. The formula used is

$$P_a = \frac{1}{N} \sum_{i=1}^N \left( \frac{z - y_i}{z} \right)^a$$

Where:

$Z$  = Poverty line

$i$  = Average expenditure per capita of the population below the poverty line.

$q$  = People are below the poverty line

$N$  = Population

$a$  = 0,1,2

$a = 0$  = Head Count Index ( $P_0$ )

$a = 1$  = Head Count Index ( $P_1$ )

$a = 2$  = Head Count Index ( $P_2$ )

## **2.2. Education**

### **2.2.1. Definition of Education**

According of Act Of the Republic Indonesia number 20, Year 2003 On national education system, Education means conscious and well-planed effort in creating a learning process so that learners will be able to develop their full potential for accruing spiritual and religious strengths, develop self-control, personality, intelligence, morals and noble character and skills that one needs for him/herself, for the community, for the nation, and for the state.

Education as human capital is as important as physical capital for achieving long-term economic success. Therefore, the government must provide good education and support the community in taking advantage of schools by making policies and adequate facilities of school itself for the community.

### **2.2.2 Relationship between Education and Poverty**

Education (formal and non-formal) can play an important role in reducing poverty in the long run, both directly through increasing productivity and efficiency in general, also directly through training the poor with the skills needed to increase their productivity and ultimate will increase their income.

(Arsyad, 2016)

Education can be accepted by widespread occupation, everyone can use it so that the idea can be said to have external benefit to education. In this case, the

rate of return of education received by the population is greater than the level of returns received by individuals. (Widiastuti, 2010, p. 49)

## **2.3 Income**

GRDP is basically the amount of added value generated by all business units within a particular area. The total value of the final goods and services provided from the production shall be equal to the value of the goods used.

Gross Regional Domestic Product (GRDP) according to the BPS is defined as the amount of added value generated by all business units in an area, or is the total value of all goods and final services produced by all economic units in an area. GRDP can describe the ability of an area to manage its natural resources. Therefore, the amount of GRDP produced by each region is highly dependent on the potential factors of production in the area.

### **2.3.1 Relationship between poverty and income**

According to Sukirno (2000), the rate of economic growth is an increase in GRDP regardless whether the increase is greater or smaller. Furthermore, economic development is not solely measured based on the growth of gross regional domestic product (GRDP) as a whole, but it should pay more attention to the extent to which distribution of income has spread the community layer and who has enjoyed the results. Thus, the decrease of GDP of a region has an impact on the quality of household consumption. If the income level of population is very limited, many poor households are forced to

change their staple food patterns to the least expensive goods by reducing quantities of goods.

## **2.4 Health**

The World Health Organization (2014) proposes a definition that aimed higher: linking health to well-being, in terms of physical, mental and social well-being, and not merely the absence of disease and infirmity.

Some economist assume that health is an economic phenomenon that can be valued from the stock or also valued as an investment so that health becomes a variable which can later be considered as a factor of production to increase the added value of goods and services, or as a target of various goals to be achieved by individuals, households and communities, known as welfare goals. Therefore, health is considered as a capital that has a positive rate of return both for individual and for wider community. (Nurmalita, 2017)

### **2.4.1. Relationship Health and Poverty**

According to World Bank (2014), poverty is a major of ill health and barrier to access health care when needed. This relationship is about financial: the poor cannot afford to purchase those things that are needed for good health, including sufficient quantities of quality food and health care. But, the relationship is also related to other factors related to poverty, such as lack of information on appropriate health-promoting practice or lack of voice needed to make social services work of them.

Health in turn is major cause of poverty. This partly due to the costs of seeking health care, which include not only out-of pocket spending on care such us consultation, tests and medicine, but also transportation costs and any informal payments to providers. It is also due to considerable loss of income associated with illness in developing countries, both of the breadwinners, but also of family members who may be obliged to stop working or attending school to take care of an ill relative. In addition, poor families coping with illness might be forced to sell assets to cover medical of expenses, borrow at high interest rates or become indebted to the community.

Strong health system improves the health status of the whole population, but especially of the poor who are ill, health and poor access to health care tend to be concentrated as well as protect households from potentially catastrophic effects of out-of-pocket health care cost. In general, poor health is disproportionately concentrated among poor.

## **2.5 Previous Study**

Perdana and Fitriarianti (2012) observed the influence of GDP Regional, education, health and unemployment on poverty in Central Java from 2004-2009. They used technique cross section and time series to analyze the variable observed. The study indicated that GDP Regional, education and health have negative and significant influence to poverty, and the unemployment has positive effect on poverty.

Nugroho (2015) studied about influence of GDP regional, education and unemployment on poverty in Yogyakarta from 1999-2013. Using GDP regional, education and unemployment as independent variable and poverty as dependent variable, Nugroho (2015) used interactive analysis model Miles and Huberman, namely the process of activity in data analysis which includes data reduction, data presentation, and conclusion. The result showed that the three independent variables are GDP regional , Education Level, and unemployment variables can be expressed to influence the variable of Poverty which as the dependent variable in this study.

Kuncoro (2014) tried to find the influence of economic growth, unemployment and education on poverty in East Java from 2009-2011. Using cross section and time series as a method and regression, the study revealed that economic growth, unemployment and education have negative and significant influence on to poverty.

Trisda(2016) studied about The Effects of Education, Health and Per capita Income on Poverty in Indonesia in 2005-2014. Using time series as a method and regression, the study reveal Education negative effect, health and Income have effect toward poverty.

Perwita and Setya (2017) observed The Effects of Education, Economic Growth and Unemployment in DIY From 2007-2015. Data used in this study are panel data consisting of cross section data in 5 districts / cities in DIY and time series data during 2007 -2015. The analytical tool used is panel data

regression. The panel data estimation technique used is the fixed effect model (FEM). The results of the analysis show that education and economic growth have a negative and significant effect on poverty levels in DIY, while the unemployment variable does not significantly influence poverty levels in DIY. This means that if there is an increase in the variables of education and economic growth it will reduce the level of poverty in DIY.

Fahmi (2015) This research is a quantitative descriptive study with timeseries data. After testing the classical assumptions, and procees with multiple linear regression analysis techniques to determine the magnitude of the effect of each variable on poverty levels. The results of this study indicate that both independent variables affect the poverty level. Partially the level of education is not significant while the level of health is partially significant.

## **CHAPTER III**

### **RESEARCH METHOD**

#### **3.1.Research Method**

This research used quantitative method, where there were dependent and independent variable. Poverty was dependent variable, while income health and education were independent variables. The research data used panel data from 4 provinces in Kalimantan. A tool to process the panel data was used Eviews 6 as computer software.

#### **3.2.Data Source**

This research used secondary data. It gathered from legal institution that had been published from Statistic Indonesia, internet, journal, book and the other data that were relevant with this research. The kind of data used pool data from 4 provinces of Kalimantan in Indonesia, which were East Kalimantan, West Kalimantan, Central Kalimantan and South Kalimantan ranges from Pool data which means the combination of cross section data and time series data.

The secondary data needed were:

- a. Education
- b. Health
- c. Income
- d. Poverty

### **3.3.Technique Data Analysis**

#### **3.3.1. Panel Data Analysis**

The researcher used panel data regression. Panel data is an element of both time series data and cross-section data. There were three methods to analyze the panel data, such as Common Effect, Fixed Effect (FE) and Random Effect (RE).

##### **1. Common Effect Model**

Common effect means estimating the data with the ordinary least square data. It is the simplest model method to combine both time series data and cross section data.

Model of Panel data Regression can be formulated as follows:

$$Y_{it} = \beta_1 + \beta_2 X_{2it} + \beta_3 X_{3it} + U_{it}$$

Where:

$Y$  = Dependent Variable (Poverty)

$\beta_1 - \beta_3$  = Parameters

$X_2$  and  $X_3$  = independent variables

$U$  = error term

$i$  = ith cross – sectional unit

$t$  = t th time period

## 2. Fixed Model Effect

This method used to reduce the possibility of omitted-variables that brings the change of intercept time series or cross section. Model of Fixed effect is formulated as follow as:

$$Y_{it} = \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + u_{it}$$

Y = Dependent Variable (Poverty)

$\beta_1 - \beta_3$  = Parameters

$X_2$  and  $X_3$  = independent variables

U = error term

i = ith cross – sectional unit

t = t th time period

## 3. Random Effect Model

Random effects models are a model used improves efficiency of least square proceed by taking into account the error of cross-section and time series. There are the formulas of Random Effect Models:

$$Y_{it} = \beta_1 + \beta_2 X_{2it} + \beta_3 X_{3it} + \varepsilon_i + u_{it}$$

$$= \beta_1 + \beta_2 X_{2it} + \beta_3 X_{3it} + W_{it}$$

Where:

Y = Dependent Variable (Poverty)

$\beta_1 - \beta_3$  = parameters

$\beta_1$  = Constant

$X_{1to3}$  = Independent Variables (Education, health and Income)

i = ith cross – section unit

$t$  = t th time period  
 $\varepsilon_{it}$  = error components model  
 $\varepsilon_i$  = cross -section or individual specific error component  
 $\varepsilon_{ut}$  = combined time series and cross section error component.

### **3.4.Significant Test of Model**

#### **3.4.1. F Test**

It is used to determine the method between Pooled Least Square and Fixed Effect. The F test Formulation is as follows:

$$F = ((R^2_{ur} - R^2_r)/m) / ((1 - R^2/m)/((1 - R^2_r)/(n-k)))$$

Where:

$R^2_r$  =  $R^2$  of Pooled Least Square Model

$R^2_{ur}$  =  $R^2$  of Fixed Effect

m = Number of restricted variable

n = Number of sample

k = Number of explanatory variable

The hypotheses from restricted of F test are as follow:

$H_0$  = Pooled Least Square (restricted)

$H_1$  = Fixed Effect (unrestricted)

Basic Decision Making:

$H_0$  is accepted if significance value is more than 5 % (F value > F table)

$H_0$  is Rejected if significance value is less than 5 % (F value < F table)

### **3.4.2. Hausmant Test**

Hausmant Test is used to choose the method between fixed effect approach method and Random effect.

Hypothesis from Hausmant test is as follow:

$H_0$  = Random effect

$H_1$  = Fixed effect

$H_0$  is rejected if chi square of value is more than chi square of the table and p value is significant. From this result, fixed effect is the appropriate method to count the panel data.

### **3.4.3. Hypothesis Testing**

#### **1. Simultaneous (F Test)**

F- Statistic Test is used to test the influence of all variables together (Widarjono, 2016). The Hypothesis of the F-test are all the independent variable that is not influenced by all independent variables,

$\beta_0 = \beta_1 = \dots = \beta_4 = 0$ , so the F test can be formulated as follow:

$$F = \frac{R^2 (K - 1)}{(1 - R^2) : (N - k)}$$

Where:

$R^2$  = Coefficient determination

$k$  = the number of parameters in the model

$n$  = the number of sample or data

## 2. Partial Test (t Test)

T-statistic is used to test the coefficient regression partially from all independent variables.

The steps of t test are:

- a) Make the hypothesis of  $H_0: \beta_1 = 0$ ,  $H_a: \beta_1 \neq 0$ . Repeat to  $\beta_2$  and so on for this step.
- b) Calculate the t test for  $\beta_2$  and  $\beta_3$ . The formula to calculate the t test as follows:

$$t = \frac{\beta_1 - \underline{\beta_i}}{se(\beta_1)}$$

- c) Compare to t statistic with the t table

## 3. Coefficient of Determination ( $R^2$ )

It is used to measure the influence of independent variables toward dependent variable. The value of  $R^2$  in the range of 0-1 or  $0 \leq R^2 \leq 1$ .

## **CHAPTER IV**

### **DATA ANALYSIS AND DISCUSSION**

#### **4.1. Data Description**

This research analyzes the influence of education, health and income on poverty in West Kalimantan, Central Kalimantan, South Kalimantan and East Kalimantan from 2012 until 2016. Secondary data was the type of data. It was gathered from legal institution that had been published, such as Badan Pusat Statistik, UNDP, etc. The research data used panel data from 4 provinces in Kalimantan. A tool to process the panel data was used Eviews 6 as computer software.

There variables used in this research are as follow:

##### **1. Dependent variable**

This research used poverty data from BPS from 2012-2016 per province in Kalimantan. There were 4 provinces of Kalimantan, such as West Kalimantan, Central Kalimantan, South Kalimantan and East Kalimantan.

##### **2. Independent Variable**

a. Education (School enrolment rate aged 19-24) as a data of education per province in Kalimantan.

- b. Health (Life expectancy of birth) used data from BPS per year from 2012 until 2016 in the province of Kalimantan. The Data used a percentage.
- c. Income (distribution of GDP at current price) data from 2012-2016 per province in Kalimantan. The data used percentage.

## **4.2. Reliability and Validity Test**

### **4.2.1. Panel Data Regression Model**

Tabel 4. 1. *Common Effect Model*

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-33.05673	11.04788	-2.992133	0.0086
LOG(EDUCATION?)	-0.262783	0.251519	-1.044784	0.3117
LOG(HEALTH?)	8.428203	2.680645	3.144095	0.0063
LOG(INCOME?)	-0.275456	0.112282	-2.453248	0.0260

Data Source: Eviews 6 (2017)

Tabel 4. 2. *Fixed Effect Model*

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	39.66846	17.16643	2.310816	0.0379
LOG(EDUCATION?)	0.061210	0.071970	0.850484	0.4104
LOG(HEALTH?)	-8.959537	4.079254	-2.196367	0.0468
LOG(INCOME?)	0.075541	0.088482	0.853743	0.4087

Data source: Eviews 6(2017)

Tabel 4. 3. *Random Effect Model*

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-33.05673	1.968204	-16.79538	0.0000
LOG(EDUCATION?)	-0.262783	0.044809	-5.864562	0.0000
LOG(HEALTH?)	8.428203	0.477563	17.64837	0.0000
LOG(INCOME?)	-0.275456	0.020003	-13.77052	0.0000

Data source: Eviews 6(2017)

Based on the data panel process in Table 4.1, 4.2 and 4.3 to get the best model than it is necessary do the chow test and Hauman test. Chow test was conducted to compare the Pool least square model (common effect) and fixed model, and the Hausman test is a test to compare the fixed effect model and random effect model.

### 1. Chow Test

Chow test is a test to compare the best model of Common effect model with fixed effect model.

$H_0$  = Common Effect Model

$H_I$  = Fixed Effect Model

Tabel 4. 4. *Chow test result*

Redundant Fixed Effects Tests

Pool: POOL

Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	163.708143	(3,13)	0.0000
Cross-section Chi-square	73.157475	3	0.0000

Data Source: Eviews 6 (2017)

If Chi Square >0.05 ,  $H_0$  is Accepted

If Chi Square <0.05,  $H_0$  is Rejected

Based on the result of regression, chi square was  $0.0000 < 0.05$ ,  $H_0$  was rejected.

It can be concluded that the best model was Fixed Effect Model.

## 2. Hausman Test

Hausman test is a test to choose the best model of Random Effect Model and Fixed Effect Model. (Raningtyas,2017)

$H_0$ = Random Effect Model

$H_I$ = Fixed Effect Model

Tabel 4. 5. *Hausman test result*

Correlated Random Effects - Hausman Test

Pool: POOL

Test cross-section random effects

Test Summary	Chi-Sq.			
	Statistic	Chi-Sq.	d.f.	Prob.
Cross-section random	491.124431		3	0.0000

Data source: Eviews 6

If chi square > 0.05,  $H_0$  is accepted

If chi square < 0.05,  $H_0$  is rejected

Best on the result of regression, chi square is  $0.000000 < 0.05$ ,  $H_0$  is rejected.

#### 4.2.2. Hypothesis Testing of Panel Data Regression

The most fitted model is fixed effect model for estimation.

Tabel 4. 6. *Summary of Fixed Effect Model*

Variable	Coefficient	t-Statistic	Probability	Explanation
C	39.66846	2.310816	0.0379	Significant
Education	0.061210	0.850484	0.4104	Not Significant
Health	-8.959537	-2.196367	0.0468	Significant
Income	0.075541	0.853743	0.4087	Not Significant
Adjust R Square	0.976883			
F- Statistic	134.8202			
Probability	0.000000			

Source: Data process 2017

With Fixed Effect Model test, the regression equation can be obtained as follows:

$$Y = \beta_0 + \beta_1 + \beta_2 E + \beta_3 H + \beta_4 I$$

$$Y = 39.6646 + 0.06120 - 8.959537 + 0.075541$$

Based on the regression equation, the value of 39.7% showed that every province in Kalimantan had education, health and income; the poverty rate would increase by 39.7%. In terms of constants per province, East Kalimantan

had the highest poverty rate (0.35%) and South Kalimantan had the lowest (-0.059%) poverty rate.

The value of regression coefficient was obtained by Education of 0.061210 which indicated that when Education increases 1 % then poverty will increase by 0.06 %. Coefficient is positive; it means that, if education level increase then poverty level also would also increase.

Regression coefficient level of Health was -8.959537; it means that if the level of health increased by 1 % the poverty would decreases by 8.95 %. Coefficient of regression is negative, negative sign means if the health increased then the poverty decrease.

The value of regression coefficient income was 0.075541 shows that when income increased by 1%, the poverty rate would increase by 0.07%. The value of positive regression coefficient means that if the income increased the poverty rate would also increase.

#### **4.2.2.1. T test**

##### **a. Education**

Education had coefficient value of 0.061210, with T test of 0.850484 and the probability of 0.4104. Whereas the probability was more than  $\alpha = 5\%$ , it mean not significant and positive influence on poverty.

b. Health

Coefficient value of health was -8.959537, with T test of -2.196367 and the probability of 0.0468. Because the probability was less than  $\alpha = 5\%$ , it means significant and positive influence on poverty.

c. Income

Based on the result of regression, coefficient value of income was 0.075541, with t test of 0.853743 and the probability of 0.4087. The probability more than  $\alpha = 5\%$ , it means that it did not significant and negative influence on poverty.

#### **4.2.2.2. F test**

F test is showed if there is significant influence between dependent variable and all independent variables. The Hypothesis testing is as follows:

$H_0$  = All independent variables does not affect the dependent variable.

$H_I$  = All independent variables affect dependent variable.

If the F statistic > F table,  $H_0$  is rejected. If the F statistic < F table,  $H_0$  is accepted.

Based on fixed effect regression, the probability (F statistic) was 0.0000 less than the probability of (0.05), it can be conclude that the  $H_0$  was rejected, it means  $H_I$  was accepted. All independent variables have significant influence on the dependent variable.

#### **4.2.2.3. Determination Coefficient $R^2$**

Coefficient  $R^2$  value was 0.984183, it means that 98 % of poverty can be explained by variables in education, health and income. The rest 2 % was explain by others variables.

#### **4.2.2.4. Province Coefficient**

In West Kalimantan province there was a coefficient of 0.268190, it means  $39.66846 + 0.268190 = 39.93665$ . Coefficient of Central Kalimantan is -0.059556, It means that  $39.66846 - 0.059556 = 39.608904$ . South Kalimantan had coefficient of -0.559430 which means  $39.66846 - 0.559430 = 39.10903$ . Coefficient of East Kalimantan was 0.350795; it means  $39.66846 - 0.350795 = 40.019255$ .

### **4.3. Discussion**

#### **4.3.1. The influence of Education on poverty**

Based on the panel data regression, education had positive and insignificant influence on poverty,  $\alpha = 5\%$  with the value of coefficient of 0.061210. It means that if the education increase by 1%, the poverty would increase 0.06 %. It shows that the level of education in Kalimantan province not maximum yet. The improvement of the policy system on education in Kalimantan might reduce the existing poverty level.

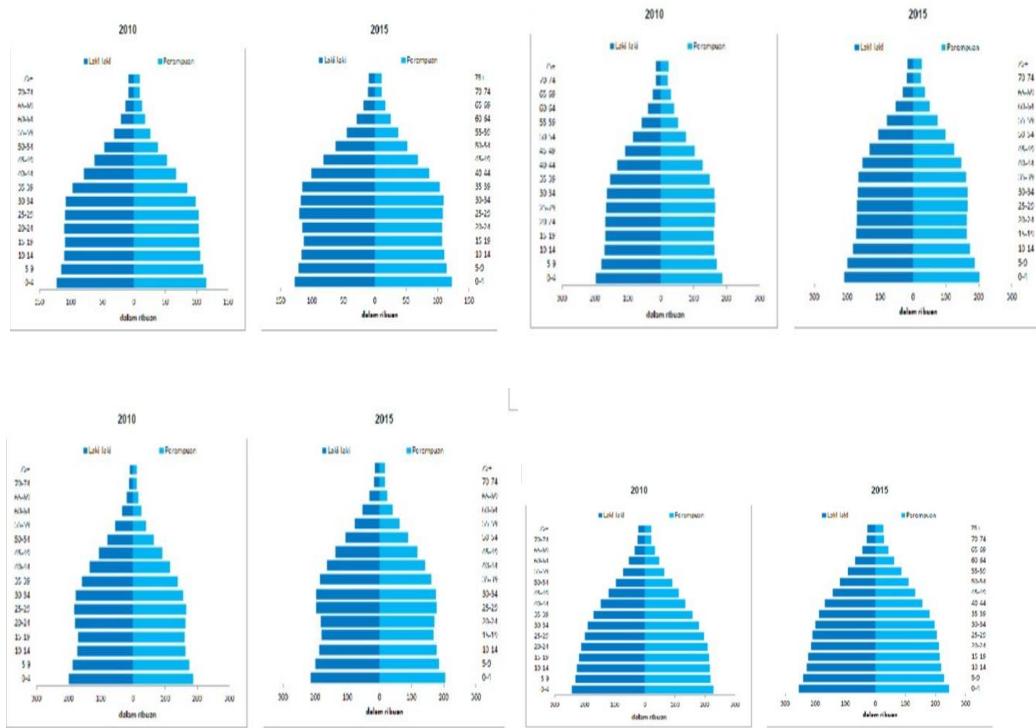
According to Arsyad (2016), education (both formal and non-formal) can play an important role in reducing long-term poverty, either indirectly, through increasing productivity and efficiency in general, or directly. Namely through training the poor with skill needed to increase their productivity which in turn will be able to increase their income. The higher the level of education, the higher the expertise and productivity found. By the end, high productivity effect community level of welfare and the poverty decrease.

A study by Digdowiseiso (2009), in education revealed that rural has higher inequality urban than urban are. Thus, it is very vulnerable to immediate shock. But nationally, education inequality has a significant decrease over the observed. (Digdowieso, 2009)

#### **4.3.2. The influence of Health on Poverty**

Health had negative and significant influence on poverty,  $\alpha = 5\%$  with the coefficient value is -8.959537. It shows if the health increase by 1 % then the poverty level would decrease 8.95%. If the health level had a negative effect on poverty, then the health level in Kalimantan is good because it did not influence poverty.

According to theory by Arsyad (2016), intervention to improve the health by the government is also a policy tool to reduce poverty. One factor that reinforces this theory is increasing the level of health will affect the level of productivity of the poor and directly affect the level of income as well. Thus, good health will have a negative impact on poverty.



*Figure 4. 1. Population Compositions of West Kalimantan, South Kalimantan, Central Kalimantan and East Kalimantan*

Source: BadanPusatStatistik (2018)

The result of population census from West Kalimantan, Central Kalimantan, South Kalimantan and East Kalimantan showed shift starting in

010 and 2015. Shifting population composition or increasing population was due to the increasing average of life expectancy in each of the province.

In general, there was increase in elderly population ( $> 64$  years) and this showed an improvement in the quality health which encouraged the increasing life expectancy of Indonesia population, especially in Kalimantan.

The increasing life expectancy of the four Kalimantan provinces, one of these was influenced by lifestyle in addition to improve the quality of health

and nutrition of the community. Improving the quality of public health also supported by adequate facilities and infrastructure.

#### **4.3.3. The influence of Income on Poverty**

Based on the panel data regression result Income has positive and insignificant influence to poverty, the coefficient value was 0.075541. It means if the income increase 1 % then poverty would increase 0.07 %. Income showed a positive effect on poverty, which in common assumes income has negative effect. From the results of the data although income increase but uneven, so poverty in the province of Kalimantan was uneven.

## **CHAPTER V**

### **CONCLUSIONS AND RECOMENDATION**

#### **5.1.Conclusions**

This research explains the influence of education, health and income on poverty in Kalimantan province such as West Kalimantan, South Kalimantan, Central Kalimantan and East Kalimantan in 2012-2016 using panel data regression.

Based on panel data regression, the best model used fixed effect model. The results analyses are as follow:

1. Education had positive insignificant effect on poverty which was seemed odd because in common assumption, education should have negative influence on poverty. It seems that common assumption for education-poverty relationship was dismissed in Kalimantan.

It was suspected that education in Kalimantan had not been established equally.

2. Health had negative and significant effect on poverty. It means that when the health of the poor gets better, the level of poverty will decreased. It is because the quality of health affected productivity, thus; it would affect income levels and ultimately determine their ability to meet their basic life needs.

3. Income had positive and insignificant influence on poverty. It is again seemingly odd because common assumption stated that income would reduce poverty.

It was suspected that income in Kalimantan province had not been distributed evenly.

## **5.2.Recommendations**

The data showed the only data variable with negative and significant effect on poverty is health. It means that health system and services in 4 Kalimantan have major role to reduce the poverty. This condition should be maintained or even improve by the Government.

The Government still has a lot to do with the level health in Kalimantan. Firstly, there is government initiative to more improve or provide good facilities in hospitals to serve the society. Secondly, the government provides good sanitation for the society. These two things are very influential in the level of health on the productivity of society.

The higher level of productivity of the society at work, the higher the people's income and the lower the level of poverty in the province of Kalimantan. Because of that, the government's influence is needs in reducing level of poverty in 4 Kalimantan Provinces in particular.

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## APPENDIX

Appendix1. Provincial Poverty, Education, Health and Income Data 2012-2016

<b>Province</b>	<b>Years</b>	<b>Poverty</b>	<b>Education</b>	<b>Health</b>	<b>Income</b>
West Kalimantan	2012	7.96	14.17	69.46	1.23
West Kalimantan	2013	8.74	19.27	69.66	1.24
West Kalimantan	2014	8.07	23.18	69.76	1.24
West Kalimantan	2015	8.44	23.32	69.87	1.26
West Kalimantan	2016	8	24.75	69.90	1.28
Central Kalimantan	2012	6.19	14.04	69.18	0.85
Central Kalimantan	2013	6.23	19.89	69.29	0.85
Central Kalimantan	2014	6.07	22.31	69.39	0.85
Central Kalimantan	2015	5.94	22.47	69.54	0.86
Central Kalimantan	2016	5.66	22.72	69.57	0.89
South Kalimantan	2012	5.01	16.48	67.11	1.23
South Kalimantan	2013	4.76	16.95	67.35	1.21
South Kalimantan	2014	4.81	20.36	67.47	1.20
South Kalimantan	2015	4.72	20.53	67.80	1.18
South Kalimantan	2016	4.52	21.89	67.92	1.16
East Kalimantan	2012	6.38	20.33	73.32	6.35
East Kalimantan	2013	6.38	25.04	73.52	5.40
East Kalimantan	2014	6.31	27.34	73.62	4.94
East Kalimantan	2015	6.10	27.55	73.65	4.32
East Kalimantan	2016	6	28.88	73.68	4.01

## Appendix 2. Common effect

Dependent Variable: POVERTY?

Method: Pooled Least Squares

Date: 12/27/17 Time: 16:55

Sample: 2012 2016

Included observations: 5

Cross-sections included: 4

Total pool (balanced) observations: 20

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-53.15920	17.64657	-3.012438	0.0083
EDUCATION?	-0.124834	0.083507	-1.494888	0.1544
HEALTH?	0.912922	0.272655	3.348266	0.0041
INCOME?	-0.859760	0.294298	-2.921394	0.0100
R-squared	0.415906	Mean dependent var		6.314500
Adjusted R-squared	0.306388	S.D. dependent var		1.297368
S.E. of regression	1.080491	Akaike info criterion		3.169565
Sum squared resid	18.67939	Schwarz criterion		3.368712
Log likelihood	-27.69565	Hannan-Quinn criter.		3.208441
F-statistic	3.797614	Durbin-Watson stat		0.232347
Prob(F-statistic)	0.031308			

### Appendix 3. Fixed Effect Model

Dependent Variable: LOG(POVERTY?)

Method: Pooled Least Squares

Date: 12/28/17 Time: 08:17

Sample: 2012 2016

Included observations: 5

Cross-sections included: 4

Total pool (balanced) observations: 20

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	39.66846	17.16643	2.310816	0.0379
LOG(EDUCATION?)	0.061210	0.071970	0.850484	0.4104
LOG(HEALTH?)	-8.959537	4.079254	-2.196367	0.0468
LOG(INCOME?)	0.075541	0.088482	0.853743	0.4087
Fixed Effects (Cross)				
_WESTKAL—C	0.268190			
_CENTRALKAL--C	-0.059556			
_SOUTHKAL—C	-0.559430			
_EASTKAL—C	0.350795			

#### Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.984183	Mean dependent var	1.823247
Adjusted R-squared	0.976883	S.D. dependent var	0.202325
S.E. of regression	0.030762	Akaike info criterion	-3.855872
Sum squared resid	0.012302	Schwarz criterion	-3.507365
Log likelihood	45.55872	Hannan-Quinn criter.	-3.787839
F-statistic	134.8202	Durbin-Watson stat	2.709882
Prob(F-statistic)	0.000000		

## Appendix 4. Random effect model

Dependent Variable: LOG(POVERTY?)  
 Method: Pooled EGLS (Cross-section random effects)  
 Date: 12/28/17 Time: 08:21  
 Sample: 2012 2016  
 Included observations: 5  
 Cross-sections included: 4  
 Total pool (balanced) observations: 20  
 Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-33.05673	1.968204	-16.79538	0.0000
LOG(EDUCATION?)	-0.262783	0.044809	-5.864562	0.0000
LOG(HEALTH?)	8.428203	0.477563	17.64837	0.0000
LOG(INCOME?)	-0.275456	0.020003	-13.77052	0.0000
Random Effects (Cross)				
_WESTKAL--C	0.000000			
_CENTRALKAL--C	0.000000			
_SOUTHKAL--C	0.000000			
_EASTKAL--C	0.000000			
Effects Specification				
		S.D.	Rho	
Cross-section random		0.000000	0.0000	
Idiosyncratic random		0.030762	1.0000	
Weighted Statistics				
R-squared	0.386651	Mean dependent var	1.823247	
Adjusted R-squared	0.271648	S.D. dependent var	0.202325	
S.E. of regression	0.172671	Sum squared resid	0.477046	
F-statistic	3.362097	Durbin-Watson stat	0.144168	
Prob(F-statistic)	0.045000			
Unweighted Statistics				
R-squared	0.386651	Mean dependent var	1.823247	
Sum squared resid	0.477046	Durbin-Watson stat	0.144168	

## Appendix 5. Chow Test

Redundant Fixed Effects Tests

Pool: POOL

Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	163.708143	(3,13)	0.0000
Cross-section Chi-square	73.157475	3	0.0000

Cross-section fixed effects test equation:

Dependent Variable: LOG(POVERTY?)

Method: Panel Least Squares

Date: 12/28/17 Time: 08:20

Sample: 2012 2016

Included observations: 5

Cross-sections included: 4

Total pool (balanced) observations: 20

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-33.05673	11.04788	-2.992133	0.0086
LOG(EDUCATION?)	-0.262783	0.251519	-1.044784	0.3117
LOG(HEALTH?)	8.428203	2.680645	3.144095	0.0063
LOG(INCOME?)	-0.275456	0.112282	-2.453248	0.0260
R-squared	0.386651	Mean dependent var		1.823247
Adjusted R-squared	0.271648	S.D. dependent var		0.202325
S.E. of regression	0.172671	Akaike info criterion		-0.497998
Sum squared resid	0.477046	Schwarz criterion		-0.298851
Log likelihood	8.979978	Hannan-Quinn criter.		-0.459122
F-statistic	3.362097	Durbin-Watson stat		0.144168
Prob(F-statistic)	0.045000			

## Appendix 6. Hausman Test

Correlated Random Effects - Hausman Test

Pool: POOL

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	491.124431	3	0.0000

\*\* WARNING: estimated cross-section random effects variance is zero.

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
LOG(EDUCATION?)	0.061210	-0.262783	0.003172	0.0000
LOG(HEALTH?)	-8.959537	8.428203	16.412246	0.0000
LOG(INCOME?)	0.075541	-0.275456	0.007429	0.0000

Cross-section random effects test equation:

Dependent Variable: LOG(POVERTY?)

Method: Panel Least Squares

Date: 12/28/17 Time: 08:24

Sample: 2012 2016

Included observations: 5

Cross-sections included: 4

Total pool (balanced) observations: 20

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	39.66846	17.16643	2.310816	0.0379
LOG(EDUCATION?)	0.061210	0.071970	0.850484	0.4104
LOG(HEALTH?)	-8.959537	4.079254	-2.196367	0.0468
LOG(INCOME?)	0.075541	0.088482	0.853743	0.4087

### Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.984183	Mean dependent var	1.823247
Adjusted R-squared	0.976883	S.D. dependent var	0.202325
S.E. of regression	0.030762	Akaike info criterion	-3.855872
Sum squared resid	0.012302	Schwarz criterion	-3.507365
Log likelihood	45.55872	Hannan-Quinn criter.	-3.787839
F-statistic	134.8202	Durbin-Watson stat	2.709882
Prob(F-statistic)	0.000000		